

WHAT IS CLAIMED IS:

- 1 1. A lamp driving apparatus, comprising:
 - 2 a controller, generating a control signal for lighting at least one of
 - 3 plural sets of lamps, each set having at least a first lamp and a second lamp, and
 - 4 generating a switching signal; and
 - 5 a lamp driver, supplying power to the at least one of sets of lamps in
 - 6 accordance with both of the control signal and the switching signal,
 - 7 wherein the switching signal causes the lamp driver to apply voltage to
 - 8 the first lamp and the second lamp of each of the at least one of sets of lamps
 - 9 with a shift of a prescribed time.
- 1 2. The lamp driving apparatus as set forth in claim 1, wherein the lamp
- 2 driver performs a logic operation AND on the control signal and the switching
- 3 signal, and supplies the power to the sets of lamps in accordance with operation
- 4 results.
- 1 3. The lamp driving apparatus as set forth in claim 1, wherein the
- 2 controller continues to output the control signal and the switching signal until
- 3 turning-off of the set of lamps so that the lamp driver continuously applies the
- 4 voltage to the sets of lamps.
- 1 4. The lamp driving apparatus as set forth in claim 1, wherein the
- 2 controller outputs the control signal and the switching signal causing the lamp
- 3 driver to repeat application and non-application of voltage to the sets of lamps in

4 a prescribed cycle for dimming the sets of lamps.

1 5. The lamp driving apparatus as set forth in claim 1, wherein the
2 switching signal includes a first switching signal for the first lamp and a second
3 switching signal for the second lamp, the first switching signal being independent
4 of the second switching signal; and

5 wherein the controller monitors the first switching signal and the
6 second switching signal, and generates the first switching signal and the second
7 switching signal causing the lamp driver to apply the voltage to the first lamp and
8 the second lamp with the shift of the prescribed time.

1 6. The lamp driving apparatus as set forth in claim 1, wherein the lamp
2 driver includes:

3 a logical multiplication circuit which performs a logical multiplication
4 operation on the control signal and the switching signal, and which outputs a
5 lamp load control signal on the basis of a logic operation result; and

6 a switching element which supplies the power to the sets of lamps in
7 accordance with the lamp load control signal.

1 7. The lamp driving apparatus as set forth in claim 6, wherein the lamp
2 load control signal includes a first lamp load control signal for the first lamp and a
3 second lamp load control signal for the second lamp, the first load control signal
4 being independent of the second lamp load control signal; and

5 wherein the controller monitors the first lamp load control signal and
6 the second lamp load control signal, and generates the first switching signal and

7 the second switching signal causing the lamp driver to apply the voltage to the
8 first lamp and the second lamp with the shift of the prescribed time.

1 8. The lamp driving apparatus as set forth in claim 1, wherein the lamp is
2 incandescent bulb having a filament.

1 9. A lamp driving apparatus, comprising:

2 a controller, generating a control signal for lighting at least one of
3 plural sets of lamps, each set having at least a first lamp and a second lamp, and
4 generating a switching signal, and outputting a lamp load control signal on the
5 basis of the control signal and the switching signal; and

6 a lamp driver, supplying power to the at least one of sets of lamps in
7 accordance with the lamp load control signal,

8 wherein the lamp load control signal causes the lamp driver to apply
9 voltage to the first lamp and the second lamp of each of the at least one of sets of
10 lamps with a shift of a prescribed time.

1 10. The lamp driving apparatus as set forth in claim 9, wherein the
2 controller performs a logical multiplication operation on the control signal and the
3 switching signal, and generates the lamp load control signal causing the lamp
4 driver to supply the power to the sets of lamps in accordance with operation
5 results.

1 11. The lamp driving apparatus as set forth in claim 9, wherein the
2 controller continues to output the lamp load control signal until turning-off of the

3 set of lamps so that the lamp driver continuously applies the voltage to the sets of
4 lamps.

1 12. The lamp driving apparatus as set forth in claim 9, wherein the
2 controller outputs the lamp load control signal causing the lamp driver to repeat
3 application and non-application of voltage to the sets of lamps in a prescribed
4 cycle for dimming the sets of lamps.

1 13. The lamp driving apparatus as set forth in claim 9, wherein the
2 switching signal includes a first switching signal for the first lamp and a second
3 switching signal for the second lamp, the first switching signal being independent
4 of the second switching signal; and

5 wherein the controller monitors the first switching signal and the
6 second switching signal, and generates the first switching signal and the second
7 switching signal causing the lamp driver to apply the voltage to the first lamp and
8 the second lamp with the shift of the prescribed time.

1 14. The lamp driving apparatus as set forth in claim 9, wherein the
2 controller includes a logical multiplication circuit which performs a logical
3 multiplication operation on the control signal and the switching signal, and which
4 generates the lamp load control signal on the basis of a logic operation result;
5 and

6 wherein the lamp driver includes a switching element which supplies
7 the power to the sets of lamps in accordance with the lamp load control signal.

1 15. The lamp driving apparatus as set forth in claim 14, wherein the lamp
2 load control signal includes a first lamp load control signal for the first lamp and a
3 second lamp load control signal for the second lamp, the first load control signal
4 being independent of the second lamp load control signal; and

5 wherein the controller monitors the first lamp load control signal and
6 the second lamp load control signal, and generates the first switching signal and
7 the second switching signal causing the lamp driver to apply the voltage to the
8 first lamp and the second lamp with the shift of the prescribed time.

1 16. The lamp driving apparatus as set forth in claim 9, wherein the lamp is
2 incandescent bulb having a filament.

1 17. A method for driving lamp, comprising the steps of:
2 providing a plurality of sets of lamps, each set having at least a first
3 lamp and a second lamp; and
4 applying voltage to a first lamp and a second lamp of each of the at
5 least one of the sets of lamps with a shift of a prescribed time.

1 18. The method for driving lamp as set forth in claim 17, further comprising
2 the step of monitoring the shift of the voltage to be applied to the first lamp and
3 the second lamp.

1 19. The method of driving lamps as set forth in claim 17, wherein the
2 voltage is continuously applied to the set of lamps after the sets of lamps are
3 turned on.

1 20. The lamp driving method as set forth in claim 17, wherein voltage
2 application and non-application to the sets of lamps are repeated in a prescribed
3 cycle so that the set of lamps are dimmed after the sets of lamps are turned on.

1 21. The lamp driving method as set forth in claim 17, wherein the lamp is
2 incandescent bulb having a filament.